lasting for a second, the instrument now described, although unprovided with any internal maintaining or regulating power, would perform all the usual functions of a perfect clock. The manner in which this apparatus is applied to the clocks, so that the movements of the hands of both may be perfectly simultaneous, is the following. On the axis which carries the scape-wheel of the primary clock a small disc of brass is fixed, which is first divided on its circumference into sixty equal parts; each alternate division is then cut out and filled with a piece of wood, so that the circumference consists of thirty regular alternations of wood and metal. An extremely light brass spring, which is screwed to a block of ivory or hard wood, and which has no connexion with the metallic parts of the clock, rests by its free end on the circumference of the disc. A copper wire is fastened to the fixed end of the spring, and proceeds to one end of the wire of the electro-magnet; while another wire attached to the clock-frame is continued until it joins the other end of that of the same electro-magnet. A constant voltaic battery, consisting of a few elements of very small dimensions, is interposed in any part of the circuit. By this arrangement the circuit is periodically made and broken, in consequence of the spring resting for one second on a metal division, and the next second on a wooden division. The circuit may be extended to any length; and any number of electro-magnetic instruments may be thus brought into sympathetic action with the standard clock. It is only necessary to observe, that the force of the battery and the proportion between the resistances of the electro-magnetic coils and those of the other parts of the circuit, must, in order to produce the maximum effect with the least expenditure of power, be varied to suit each particular case.

In the concluding part of the paper the author points out several other and very different methods of effecting the same purpose; and in particular one in which Faraday's magneto-electric currents are employed, instead of the current produced by a voltaic battery: he also describes a modification of the sympathetic instrument, calculated to enable it to act at great distances with a weaker electric current than if it were constructed on the plan first described.

November 30, 1840.

At the Anniversary Meeting, the Marquis of Northampton, President, in the Chair,

Lieut.-Colonel William Henry Sykes, on the part of the Auditors of the Treasurer's Accounts, reported that the total receipts during the last year, inclusive of a balance of 1808*l.* 9*s.* 7*d.*, carried from the account of the preceding year, amounted to 5725*l.* 8*s.* 10*d.*: that the total payments in the same period amounted to 4787*l.* 9*s.* 3*d.*, leaving a balance in the hands of the Treasurer of 937*l.* 19*s.* 7*d.*

The Thanks of the Meeting were given to the Auditors for the trouble they had taken in examining the Treasurer's Accounts.

The Treasurer reported the numerical state of the Society.

The Thanks of the Meeting were voted to the Treasurer.

The Secretary read the following list of deceased Fellows of the Royal Society since the last Anniversary in 1839; of those withdrawn; and of Fellows admitted into the Royal Society since the last Anniversary.

List of Fellows of the Royal Society deceased since the last Anniversary (1839).

On the Home List.

Lord Arden.
George Simon Borlase, Esq.
Sir Anthony Carlisle, Knt.
Lord Henry John S. Churchill.
Rev. Alexander Crombie, LL.D.
Earl Ducie.
Lord Garvagh.
Davies Gilbert, Esq.
Lewis Alexander Grant, Esq.
Alexander Hay, M.D.
Lord Holland.
Alexander Copland Hutchinson, Esq.
Thomas Leybourn, Esq.
The Bishop of Lichfield and Coventry.
Sir John William Lubbock, Bart.
Rev. Francis Lunn, B.A.
Simon MacGillivray, Esq.
The Earl of Mansfield.
The Earl of Morley.
Captain Charles Phillips, R.N.
James Prinsep, Esq.
Rev. Thomas Rackett, M.A.
John Rickman, Esq.
John Rogerson, M.D.
Sir Robert Seppings, Knt.
Captain Matthew Smith, R.N.
Admiral Sir William Sidney Smith, K.C.B.
Major-General Sir Joseph Stratton, Knt. C.B.
Nicholas Aylward Vigors, Esq., M.P.
Sir Jeffrey Wyattville, Knt.

On the Foreign List.

J. F. Blumenbach, of Göttingen.
Wilhelm Olbers, of Bremen.
Le Baron Poisson, of Paris.

Withdrawn from the Society.

The Earl of Tyrconnel.

List of Admissions into the Royal Society since the last Anniversary (1839).

On the Home List.

His Royal Highness Prince Albert, K.G.
James Annesley, Esq.
John Auldjo, Esq.
Martin Barry, M.D.
John Theophilus Boileau, Esq., Captain in the E.I.C.S.
Lieut.-Colonel John George Bonner, E.I.C.S.
William Burge, Esq.
John Caldecott, Esq.
Thomas Cook, Esq., Lieut. R.N.
Henry Drummond, Esq.
Walter Ewer, Esq.
John P. Gassiot, Esq.
Thomas Tassal Grant, Esq.
Thomas Henderson, Esq.
William Jory Henwood, Esq.

William Hutton, Esq.	John Parkinson, Esq.
John Gwyn Jefferys, Esq.	Joseph Phillimore, LL.D.
Thomas Wharton Jones, Esq.	Rev. Charles Pritchard, M.A.
Edward Kater, Esq.	The Duke of Richmond.
Henry Lawson, Esq.	John Rogers, Jun., Esq.
Lord Lyttleton.	George Leith Roupell, M.D.
John Grant Malcolmson, M.D.	William Sharp, Esq.
John Narrien, Esq.	John Pye Smith, D.D.
The Bishop of Norwich.	James Whatman, Jun., Esq.

On the Foreign List.

Jean Baptiste Dumas.	Johannes Müller.
Justus Liebig.	Jacques Charles François Sturm.

The President then addressed the Meeting as follows:

Gentlemen,

In addressing you at the termination of this, the second year that I have had the honour of presiding over your Society, my first duty is to return my thanks to those gentlemen whom you have nominated to be my Council. They have rendered an onerous duty comparatively light and easy by their unremitting attendance and zeal; and have, as I trust, prevented your affairs from suffering from any incompetency on my part. In making my report of the transactions of the last year, I know of nothing to regret, except the loss of some of our valued Associates, who between the end of last November and the present time have paid the debt of nature.

Among the new members enrolled in our body, it will perhaps be right to mention the name of the Bishop of Norwich, as being President of the Linnean Society, one of the oldest branches that may be considered as thrown off from our parent stem. Also that of the Duke of Richmond, as President of the two newest Associations founded for the promotion of science, the Royal Agricultural and Botanical Societies. We have one new member of still higher rank, who has honoured us by becoming one of our Fellows, H. R. H. Prince Albert, the consort of our beloved Queen and Patroness. As your organ, Gentlemen, I will venture to say that you duly appreciate the honour conferred on yourselves; at the same time while His Royal Highness gratifies us by joining our body, we entertain no doubt that he does so from the just conviction that the patronage and advancement of science are national objects of the deepest importance.

The Antarctic Expedition, to whose departure I adverted in my last year's Address is, I trust, now successfully pursuing its career of scientific research. Already a portion of the fruits of its labours has reached us, and promises an abundant and valuable harvest. The fixed Magnetic Observatories on the territories of Her Majesty are now also in full operation; while foreign powers have given us

the assistance of observations made at the same instant of time, and on the same system as our own. I have the satisfaction to state, that these observatories exceed forty in number.

While these researches are being made by our own and other states, private enterprise is not idle. Mr. Enderby, to whom geography is already indebted, has sent out a vessel for the purposes of discovery in the Antarctic seas, with the object of approaching as near as may be to the Southern pole. His ship is navigated by Mr. Mapleton, an officer who had been selected by Her Majesty's Government to take a part in Captain Ross's expedition; but he had not returned to England before that expedition had sailed. We may well hope that he will merit this double confidence, and that he will, if his life be spared, add another wreath to the laurels of England, won by a Parry and a Ross, a Cooke and a Vancouver.

You are aware, Gentlemen, that previously to the departure of the late expedition, the Council of the Royal Society was requested by the government to draw up a statement of the most desirable objects in science to which the attention of the officers employed might be directed. With this request, as you might also know, the Council immediately complied; and in the execution of the duty thus devolved on us, the assistance of the Scientific Committees was our principal means of success. Since that time it has occurred to us, that the same recommendations, in rather a different shape, might be of great use to other scientific travellers. We have accordingly taken considerable pains in perfecting these suggestions, which we have caused to be printed for the public in general. We have already furnished copies to the Commander of the Expedition to the Niger, and I hope that, in addition to his higher objects, he may be enabled to promote our acquaintance with the details of the geography and natural history of those imperfectly known parts of the globe.

I have the satisfaction to inform you, that by desire of the Council Mr. Shuckard has completed a Catalogue of the valuable manuscript letters in our library, among which are many from Ray, Willoughby, Newton, Boyle, Hook, and other eminent men, which we trust may serve as a useful aid to those Fellows who may wish to consult documents of so much interest and value.

You will also be glad to know that Mr. Halliwell, one of our Fellows, has undertaken and executed the task of making a catalogue of the miscellaneous manuscripts in our library; a labour for which I am sure you will feel much indebted to the author. In this collection the Society possesses one most valuable manuscript, the *Principia* in the hand-writing of the immortal Newton.

The Royal Society, Gentlemen, was founded for the advancement of natural knowledge, not for any purposes of private advantage or vain glory. It must, therefore, always hail the foundation and prosperity of new bodies of scientific men, brought together by the same object in particular branches of science, either in the abstract, or connected with important arts and manufactures. It cannot but rejoice, therefore, at the continued prosperity of the British Associ-

ation, and in the formation of new societies for Microscopical Research, and for the improvement of Botany and Agriculture.

With respect to the last of these, we must look with satisfaction to every effort to carry the torch of science, to light up the intricacies and doubts of an art, the first probably in age, and certainly the first in importance to civilized man. As to the Botanical Society, we cannot but be glad that the want of a public and national Garden should be in some measure supplied, and we may indulge a hope that the example may, at a future time, lead our Government to provide an establishment commensurate with the wealth of Great Britain, with the magnitude of the metropolis, and with the extensive colonial empire from which it might be supplied with the productions of the most varied climates.

With the continued and increasing prosperity of the British Association, I may the more boldly call on you to sympathize, as the greater part of its most active and talented members are also among the most valued of our own Fellows. It had this year a great additional merit in the very numerous attendance of the scientific natives of other countries, and it gave to those among us who were present at Glasgow the opportunity of becoming personally acquainted with some of our Foreign Members; with an Encke, and an Agassiz. The latter gentleman, having fortunately extended his visit to England, we have now the pleasure of seeing him at our Anniversary; a pleasure that we should have probably lost, had he not been attracted by the meeting of the British Association.

During the last year we have had more than one occasion of testifying our grateful and loyal attachment to our Royal Patroness. Another now presents itself, which I am sure you will gladly seize, to express our joy at the birth of a Princess, our gratitude to Heaven for our Sovereign's safety, and our fervent prayers for her long and prosperous reign over the hearts as well as persons of her subjects.

Since we last assembled our room of meeting has been ornamented, as you will see, Gentlemen, by the portrait of our late Royal President, from the pencil of Mr. Phillips. I am sure that you will be gratified by this addition to the likenesses of the far greater number of my predecessors. Future successors of the present Fellows of the Royal Society will look with satisfaction at the striking representation of a Prince, who has added to the many favours received by us from his illustrious house, that of deigning to preside over our Meetings and our Councils.

Of the papers that have been read at our Meetings, it is not necessary for me to speak. Of their merits you will be enabled to judge in a considerable degree by the Abstracts contained in our printed Proceedings; while those that have appeared to the Council, assisted by the Scientific Committees, to be of the most importance, will be found in the Philosophical Transactions. As a new proof of which I cannot, however, refrain from adverting for a moment to one topic,—the discovery of Photography, for which we are indebted to a Neipce, a Daguerre, and a Talbot; and which not only promises important results to art, but valuable assistance also, by the applica-

tion of an Ibbotson and others, to those branches of knowledge which are connected with organic matter. This is, however, not all. Through the interesting observations of Sir J. Herschel and Mr. Hunt, followed up, as they will doubtless be, by other philosophers, a vista seems to open into hitherto unexplored regions of science.

I have the honour, Gentlemen, to inform you that the Council have awarded the Royal Medals for the present year to Sir John F. W. Herschel and Professor Wheatstone; one Copley Medal to Professor Liebig, and another to M. Sturm; and the Rumford Medal to M. Biot.

SIR JOHN LUBBOCK.

It is to me a cause of the highest satisfaction that I have to present through you this Royal Medal to Sir John F. W. Herschel, being the fourth Medal that has been awarded to him by the decision of different Councils.

It is to myself and to the other Members of the Council a most gratifying circumstance, that in an invention of great interest to art, he has found an instrument capable of making us acquainted with most curious laws regulating the chemical action of the different rays of the spectrum on the same substances. They have an additional interest to us as well as to you, in reminding us of researches made by the honoured parent whose example of scientific zeal he so well emulates. The observations that Sir J. Herschel has made in his recent communication, appear likely to lead to new discoveries in optical as well as chemical science; and we trust that the papers already before us may be the forerunners of still more striking and important results.

PROFESSOR WHEATSTONE.

It is with great pleasure that I address you, and present to you one of those Medals that our Royal Patroness has placed at the disposal of the Council of our Society. Your valuable experiments, and the ingenious methods by which you have solved the difficult question of Double Vision, form the immediate, and certainly sufficient motive, for their adjudication. It is, however, still more satisfactory, as it gives me, as their organ, the opportunity to mark their sense of the value of your other discoveries, of the science and ingenuity by which you have measured Electrical Velocity, and by which you have also turned your acquaintance with Galvanism to the most important practical purposes.

PROFESSOR DANIELL.

In confiding to your charge, as our Foreign Secretary, the Rumford Medal which the Council has awarded to M. Biot, I am sure that every cultivator of the higher and more abstruse branches of science will feel that it is bestowed on a philosopher, whose optical researches on the curious and interesting subject of Polarized Light are of the highest value. You may, at the same time that you forward the Medal, assure M. Biot of the anxious wish of the Royal

Society that he may be long enabled to carry on inquiries so honourable to himself, and so important to more than one branch of science.

Professor Daniell, I hold in my hand, and deliver to you one of the Copley Medals, which has been awarded by us to Professor Liebig. My principal difficulty, in the present exercise of this the most agreeable part of my official duty, is to know whether to consider M. Liebig's inquiries as most important in a chemical or in a physiological light. However that may be, he has a double claim on the scientific world, enhanced by the practical and useful ends to which he has turned his discoveries. I hope that he may long be able to follow at the same time the paths of scientific research and practical utility.

Professor Daniell, I have again to call on you, in your official capacity, to transmit a Medal to the Continent. The gentleman to whom we have adjudged it is M. Sturm, for his valuable mathematical labours, the fruits of which must be important, not only to mathematics, but also to those other high and abstruse sciences to whose advancement algebraical analysis is a necessary instrument. In his solution, therefore, of a problem which has baffled some of the greatest mathematicians that the world has produced, he has well earned the gratitude of every lover of natural knowledge.

You will, Gentlemen, hear read an account of the eminent men connected with our Society whom we have had the misfortune to lose since last November. Having confided the task of enumerating them to one of your Members, more able than myself to do justice to their merits, I shall not further touch upon the subject than to express my deep regret at the decease of one who had been my predecessor in this Chair, and to whose counsel I might have looked for aid in any conjuncture of difficulty, with full reliance on his good sense and ability, and also on his zeal in any matter in which the interests of the Royal Society were at stake. I may also be permitted to express the condolence of all the Members of the Royal Society with the domestic affliction of our valued Treasurer by the decease of his father, who was also one of our Fellows. I will now desire Dr. Roget to read the account of those whom we now miss from our ranks.

The first name in the list of our deceased Fellows, which it is my melancholy duty to notice, is one which cannot be mentioned in this room, without feelings of deep regret for the loss of his services and of affectionate respect for his many virtues: it is hardly necessary for me to add that I refer to our late associate and former President, Mr. Davies Gilbert.

He was the only surviving son of the Rev. Edward Giddy, of St. Erth in Cornwall, and his mother, whose maiden name was Davies, was the representative of several ancient and distinguished families in that county, and the heiress likewise of very considerable property. His early education, which was almost entirely domestic, was

chiefly superintended by his father, who was an accomplished classical scholar; and in 1785 he became a gentleman commoner of Pembroke College, Oxford, where he attended the lectures of Dr. Beddoes on chemistry, Dr. Sibthorp on botany, and Mr. Hornby on geometry and astronomy, and devoted himself with very unusual diligence to the study of mathematics and the natural sciences. He used to boast in after life, with very becoming pride, that he was the first student of his class in the University of Oxford, who had ever read the Principia of Newton.

In 1791, he was elected a Fellow of this Society, and became associated from that time forward with the most eminent men of science in the metropolis. He had, in very early life, appreciated the extraordinary combination of poetical and philosophical genius in his friend and fellow-countryman Humphry Davy, at that time in a very humble capacity; and by recommending him, first, as an assistant to Dr. Beddoes in his experiments on the medical effects of gaseous inspirations, and, secondly, to the Royal Institution, he had the merit and good fortune of contributing to rescue from obscurity one of the greatest discoverers in modern chemistry. In the year 1804, he became Member of Parliament for Helston, and in 1806 for Bodmin, a borough in his own immediate neighbourhood, which he continued to represent until the era of Parliamentary Reform in 1832. He was emphatically the representative of scientific interests in the House of Commons, and contributed by his exertions to carry many very important projects, including amongst them the great breakwater at Plymouth and the bill for the revision of weights and measures; a bill founded upon the report of a commission of which he was a member, in conjunction with Captain Kater, Dr. Young and Dr. Wollaston.

Mr. Davies Gilbert was the author of Papers in our Transactions "On the Mathematical Theory of Suspension Bridges*," with particular reference to the Menai bridge, which was at that time in progress, and the curvature of which was considerably modified in conformity with the results of his calculations:—"On the Progressive Improvements made in the Efficiency of Steam-engines in Cornwall, with investigations of the methods best adapted for imparting great Angular Velocities†," in which he first distinctly defined and made known to men of science what is termed the *duty* of steam-engines, from the correct observation of which so many important practical improvements have followed:—"On the Nature of Negative and Imaginary Quantities‡," which contains many ingenious views, although they have been in a great measure superseded by later speculations on this subject. Mr. Gilbert was a mathematician of the old school; but the papers to which we have just referred are very creditable specimens of the clearness with which he apprehended the bearing of some simple theoretical truths upon very important practical questions.

* For 1826, Part III. p. 202.
† For 1830, Part I. p. 121.
‡ For 1831, Part II. p. 341.

He became President of this Society in 1828, on the resignation of Sir Humphry Davy; a situation from which he retired in 1831. He continued, however, for the remainder of his life, to take a prominent part in the concerns of the Society; and there are few of my brother-Fellows, whom I have now the honour of addressing, who have not had opportunities of observing and appreciating his constant zeal for the interests of science, the variety and philosophical character of his conversation, the simple and unaffected eloquence of his public addresses, and, above all, that sweetness of temper and kindness of heart which beamed forth in the expression of those truly classical and benevolent features, which one of the most accomplished of our artists (himself a brother-Fellow) has so happily perpetuated in the portrait which adorns these walls. The very absence of that inflexibility of purpose and of opinion which some might consider essential to the perfection of the character of a philosopher, seemed, in his case, the proper developement of that natural benevolence and humanity which made him so justly beloved in every relation of life, whether as a husband, a father, and a brother, —as a master, a landlord, and a friend.

Mr. Gilbert was the author and editor of several antiquarian and other works relating to his native county, whose interests he always laboured to promote with more than common zeal and patriotism. He was President of the Cornish Geological Society from the period of its first establishment in 1814, and he never omitted attending its meetings, though on the last occasion he was so weak as to be compelled to resign the chair to his friend and countryman Sir Charles Lemon. In 1808, he married Miss Gilbert, and assumed her name in 1817, on succeeding to a very large property in Sussex. The same simple and unaffected character which distinguished him in public life was still more conspicuous in his domestic relations. He died on the 24th of December last, and his body was borne to the grave by his own labourers, and followed by his widow and family in that primitive and unostentatious form which best suited the simplicity and natural humility of his own character.

Dr. Samuel Butler, Bishop of Lichfield, was born in 1774, at Kenilworth, which was likewise the birth-place of two other contemporary prelates of our church. He was educated at Rugby, and became afterwards a member of St. John's College, Cambridge, where he gained the highest classical honours which the University could confer. In 1798 he was made Head Master of Shrewsbury School, over which he continued to preside during a period of thirty-eight years. His great acquirements as a scholar, his eminent skill as a teacher, his active interest in the welfare of his pupils, and the tact and knowledge of character which he showed in their management, all contributed to raise the school to the highest reputation, and to give it, during many years, the pre-eminence over every other school in the kingdom in the number and rank of the academical honours which were gained by his scholars. The date of his elevation to the Bench was nearly contemporaneous with the appearance of that fatal disease which, after three years of the most depressing suffer-

ings, borne with most exemplary patience and resignation, brought him to the grave. He was a man of great cheerfulness of temper and disposition, kind, affectionate and generous in every relation of life, and justly the object of the grateful attachment and love of his numerous pupils.

Dr. Butler was the author of an elaborate edition of Æschylus, with the notes and text of Stanly, and of several educational and other works. He formed a very extensive library; and his collection of Aldines, which is unhappily now dispersed, was perhaps the most complete in Europe. One of his last works was an interesting memoir of Dr. John Johnstone, of Birmingham, with whom he had long been connected by the bonds of the most affectionate friendship.

Mr. James Prinsep, whose brilliant career of research and discovery has been closed by a premature death in the flower of his age, was Principal Assay Master, first of the Mint at Benares, and secondly of that of Calcutta, where he succeeded Professor Wilson in 1833; he was a young man of great energy of character, of the most indefatigable industry, and of very extraordinary accomplishments; he was an excellent assayist and analytical chemist, and well acquainted with almost every department of physical science; a draughtsman, an engraver, an architect, and an engineer; a good Oriental scholar, and one of the most profound and learned Oriental medallists of his age.

In 1828 he communicated to our Society a paper "On the Measurement of High Temperatures," in which he described, amongst other ingenious contrivances for ascertaining the order, though not the degree, of high temperatures, an air-thermometer applicable for this purpose, and determined by means of it, probably much more accurately than heretofore, the temperature at which silver enters into fusion.

His activity whilst resident at Benares has more the air of romance than reality. He designed and built a mint and other edifices; he repaired the minarets of the great mosque of Aurengzebe, which threatened destruction to the neighbouring houses; he drained the city and made a statistical survey of it, and illustrated by his own beautiful drawings and lithographs the most remarkable objects which the city and its neighbourhood contains; he made a series of experimental researches on the depression of the wet-bulb hygrometer; he determined from his own experiments the values of the principal coins of the East, and formed tables of Indian metrology and numismatics, and of the chronology of the Indian systems and of the genealogies of Indian dynasties, which possess the highest authority and value.

When transferred to Calcutta, he became the projector and editor of the "Journal of the Asiatic Society of Bengal," a very voluminous publication, to which he contributed more than one hundred articles on a vast variety of subjects, but more particularly on Indian coins and Indian Palæography. He first succeeded in deciphering the legends which appear on the reverses of the Greek Bactrian coins,

on the ancient coins of Surat, and on those of the Hindoo princes of Lahore and their Mahomedan successors, and formed alphabets of them, by which they can now be readily perused. He traced the varieties of the Devanagari alphabet of Sanscrit on the temples and columns of Upper India to a date anterior to the third century before Christ, and was enabled to read on the rocks of Cuttock and Gujarat the names of Antiochus and Ptolemy, and the record of the intercourse of an Indian monarch with the neighbouring princes of Persia and Egypt; he ascertained that, at the period of Alexander's conquests, India was under the sway of Boudhist sovereigns and Boudhist institutions, and that the earliest monarchs of India are not associated with a Brahminical creed or dynasty. These discoveries, which throw a perfectly new and unexpected light upon Indian history and chronology, and which furnish, in fact, a satisfactory outline of the history of India, from the invasion of Alexander to that of Mohammed Ghizni, a period of fifteen centuries, are only second in interest and importance, and we may add likewise in difficulty, to those of Champollion with respect to the succession of dynasties in ancient Egypt.

These severe and incessant labours, in the enervating climate of India, though borne for many years with little apparent inconvenience or effect, finally undermined his constitution; and he was at last compelled to relinquish all his occupations, and to seek for the restoration of his health in rest and a change of scene. He arrived in England on the 9th of January last; but the powers both of his body and his mind seemed to have been altogether worn out and exhausted; and after lingering for a few months, he died on the 22nd of April last, in the forty-first year of his age. The cause of literature and archæology in the East could not have sustained a severer loss.

Sir Anthony Carlisle was born at Stillington, in the county of Durham, in the year 1768. After commencing his professional education at York, under the care of his uncle, he became a student at the Hunterian School of Anatomy, in Windmill Street, under Dr. Baillie and Mr. Cruikshank, where he attracted the particular notice of John Hunter. He subsequently became a resident pupil of Mr. Henry Watson, one of the most eminent surgeons in the metropolis, whom he succeeded at the Westminster Hospital in 1793. In 1800 he communicated to our Transactions a paper "On a Peculiarity in the Distribution of the Arteries sent to the Limbs of Slow-moving Animals." This was followed by many others on various points of comparative and human anatomy, including his papers "On Muscular Motion," and "On the Arrangement and Mechanical Action of the Muscles of Fish," which formed the Croonian Lectures for 1804 and 1806. He was the author likewise of many communications in the Transactions of the Linnean and Horticultural Societies and in other contemporary journals, on different branches of natural history and physical science.

"An Essay on the Connexion between Anatomy and the Fine

Arts," led to his appointment, in 1808, to the Professorship of Anatomy to the Royal Academy, a situation which he filled with great advantage to the students during a period of sixteen years.

Sir Anthony Carlisle was not less distinguished for his knowledge of anatomy, physiology, and natural history, than for his professional merits, and for his patience and skill as an instructor of medical students. As a practitioner, he was invariably kind and attentive to those who were entrusted to his care, and eminently liberal in devoting his professional services to those who had no adequate means of repaying them.

Mr. NICHOLAS AYLWARD VIGORS was born in 1787, at Old Leighlin, in the county of Carlow, where his family had long resided. After the usual preparatory education, he proceeded to the University of Oxford, where he became a very diligent and successful student. On quitting the University, he purchased a commission in the Guards, and distinguished himself highly at the battle of Barossa, by continuing to bear the colours of his regiment after he was severely wounded. On his return from the Peninsula, he was prevailed upon, by the earnest entreaties of his family, to quit the army; and he deveted himself afterwards, with characteristic ardour, to scientific and literary pursuits.

Mr. Vigors was one of the founders and the first Secretary of the Zoological Society, to whose museum he gave his very valuable collections of ornithology and entomology, which were the two branches of natural history he had most carefully studied. He was the author of a very elaborate paper in the Linnean Transactions*, "On the Natural Affinities which connect the Orders and Families of Birds," in which he attempted to apply in detail the same principles of arrangement that Mr. MacLeay had previously sketched out in his *Horæ Entomologicæ*, in a more general way, as applicable to the whole animal kingdom. He afterwards published, in conjunction with Dr. Horsfield, another very valuable memoir† on the Birds of Australia, grounded upon a rich collection from that country, in the possession of the Linnean Society, which they described and arranged according to their natural affinities. He was likewise the principal editor, during several years, of the "Zoological Journal," in which he wrote many memoirs, chiefly devoted to the further exposition of his views with respect to the affinities of birds, but some of them descriptive of new or rare Mammalia, or new forms of exotic insects or birds.

Mr. Vigors was a man of very considerable attainments as a scholar as well as a naturalist, and made a liberal use of an ample private fortune in the promotion of those sciences which he cultivated: he was the representative in Parliament, for some years before his death, first of the city, and lastly of the county of Carlow.

Mr. RICKMAN was born in 1771, and educated at Westminster School, from whence he proceeded as a student to Christ Church, Oxford. Early in life he was recommended by Dean Jackson as

* Linnean Transactions, vol. xiv. † Ibid., vol. xv.

Secretary to Mr. Abbott, the Speaker of the House of Commons, and was chosen to examine and digest the Parliamentary returns under the first Population Act in 1800, a duty which he continued to perform at the three succeeding decennial periods, and was preparing to discharge it for the fifth time during the present year, when he was attacked by the disease which terminated in his death. He was appointed second Clerk Assistant to the House of Commons in 1815, and subsequently Clerk Assistant, an office which he continued to hold for the remainder of his life.

The introductions to the "Population Returns," of which he was the author, are remarkable for the very able analysis which they contain of the general condition, changes and prospects of all classes of the population.

Mr. Rickman was an excellent classical scholar, and was, in addition to many other attainments, extremely well acquainted with many branches of engineering and practical mechanics. He was the intimate friend, and after his death the executor, of the late Mr. Telford, whose autobiography he published, with a preface and an atlas of engravings descriptive of his principal works, which is in every way worthy of the fame of that great engineer.

Sir Jeffrey Wyattville, member of the Royal Academy and a distinguished architect, was a member of a family which has long been honourably connected with the arts. He was born in 1766, and acquired a knowledge of his profession under the instructions of his father and uncle, and was subsequently employed, during many years, in the somewhat ambiguous capacity of architect and builder in the execution of many considerable works. In 1824 he was selected by George IV., to whom he had been formerly known, to design and superintend the magnificent alterations and additions to Windsor Castle, a truly royal and national work, in which he succeeded in combining uncommon external grandeur and strict architectural propriety with great convenience and splendour of internal arrangements. Sir Jeffrey Wyattville, besides many important original works, made very extensive additions to the principal mansions of our nobility, including Chatsworth, Longleat, Woburn, Badminton, and Ashridge. He was a man of sound judgment and great integrity, and was very generally beloved for the remarkable simplicity and frankness of his manners, his great kindness of heart, and cheerful and unaffected good humour. He died in February last, and was buried in St. George's Chapel, at Windsor, in a vault which he had himself prepared for the reception of the remains of a beloved daughter, who died in the flower of her age.

Captain Charles Phillipps, of the Royal Navy, was the author of several inventions of great value in navigation, and in the equipment and management of ships: such are his methods of suspending compasses so as to avoid concussions in time of action; his improvement of the pump-dale of ships, and more particularly the capstan, which bears his name, and which is in general use in the Navy. He was an active and enterprising officer, who had seen much service during the last war, had been eminently successful in rescuing

slaves off the coast of Africa, and had nearly fallen a victim, in common with the greatest part of his crew, to that pestilential climate.

Sir ROBERT SEPPINGS received his education as a shipwright under the late Sir John Henslow, Surveyor of the Navy, and continued in connexion with the important service of our dock-yards during a period of fifty years. He was the author of many important improvements in our naval architecture, including his system of diagonal bracing and trussing, which formed the subject of two memorable Papers in our Transactions in the years 1814* and 1818†, and which attracted an unusual amount of public attention. The great principle of this method was such an arrangement of the principal timbers as would oppose a powerful mechanical action to every change of position of the ribs and other timbers in every part of the ship; thus firmly compacting together the entire fabric, and preventing that perpetual racking of beams and working of joints, which, in the ancient system of ship-building, produced hogging, creaking, leakage, and rapid decay; and filling up likewise every vacuity between the timbers, which were occasionally the unavoidable receptacles for foul air, filth, vermin, and various other sources of rottenness and disease.

These important improvements, though opposed to the inveterate prejudices of the older shipwrights, a body of men who have not sufficiently valued and understood, in this country at least, the just principles of mechanical action, in the practical operation of ship-building, were universally adopted in the Navy under the enlightened administration of Mr. Charles York, and the powerful advocacy of Sir John Barrow‡: and the merit of their author was acknowledged by his appointment as Surveyor of the Navy, and by the award of the Copley Medal of this Society.

This was not the only important improvement which Sir Robert Seppings introduced into our system of naval architecture. The Admiralty presented him with £1000 as a reward for his simple yet most useful invention of an improved block for supporting vessels, by which their keels and lower timbers were much more easily and promptly examined and repaired. His plan for lifting masts out of the steps, which superseded the employment of sheer hulks for that purpose, has been the means of saving much expense and labour. His new mode of framing ships has led to a much more extensive use of short and small timbers, which were formerly of little value; but the most valuable of all the reforms of construction for which the Navy of England is indebted to him, was the substitution of round for flat sterns, which afford increased strength to the framework of the ship, greater protection against *pooping* in heavy seas,

* On a New Principle of Constructing His Majesty's Ships of War.—Phil. Trans. 1814, p. 28.

† On the great strength given to Ships of War by the application of Diagonal Braces.—Phil. Trans. 1818, p. 1.

‡ In very able articles in the 24th and 43rd Numbers of the Quarterly Review.

an almost equal power of anchoring by the stern and by the bow, a more secure and effective position for the rudder, and a stout platform for a powerful battery, embracing a sweep of more than 180°. This capital improvement was strenuously opposed by many distinguished naval officers, who regretted the loss of those magnificent cabins, which were better suited for purposes of state than of service; but the good sense of less prejudiced judges happily prevailed, and secured for our ships of war an additional claim upon the respect of our enemies.

Foreign nations have not been tardy to acknowledge the value of these important improvements, and their author received many substantial proofs of their sense of his merits; and we may safely affirm, that in the national record of the great benefactors of their country, there are few names which will deserve, and, we trust, continue to receive, a more grateful commemoration than that of Sir Robert Seppings.

It has long been the practice of the Royal Society to associate with its body those persons in our country who are most eminent for their high rank or their commanding talents, for their distinguished public services, for their accomplishments in the arts, for their attainments in literature, for the important influence which their virtues or labours may have exercised upon the character and prospects of society, or upon the general interests of humanity; wisely judging that science will gain both in the enlargement of its objects and in the dignity and estimation of its cultivators, by being thus united with whatever is best entitled to command and to receive the admiration and respect of mankind: it is amongst this class of our Members that I have to notice several losses of more than ordinary importance.

The Earl of Mansfield was a nobleman of illustrious family, who, in addition to many other accomplishments, was one of the most elegant and effective parliamentary orators of his day.

Lord Holland was Chancellor of the Duchy of Lancaster, and a nobleman who was remarkable for his profound knowledge of the constitutional history of his country, and for the extent and variety of his literary attainments*. It was the remark of a well-known philosophical author and writer, "that there was something so sweet in the blood of the Foxes, that no one could approach them without feeling the fascination of their social powers:" and there was probably no man of his age who was the object of more enthusiastic love and admiration of his friends, private and political, than Lord Holland.

Sir William Sydney Smith was a hero in the most chivalrous period of our naval history, the scenes of whose early triumphs have so recently been rendered illustrious by others of an equally memorable character.

Sir John Lubbock was one of those persons engaged in trade whose extensive transactions and liberal views give dignity to the

* He was the author of a most elegant account of the life and writings of Lope de Vega, accompanied by some beautiful translations of his more remarkable poems.

operations of commerce: it is not one of the least distinctions of such a father, that his name and honours have been inherited by one whose profound acquirements in the most difficult branches of science have merited and received the highest honours which this Society is able to confer.

In our foreign list we have to lament the loss of three of our most illustrious members, Blumenbach, Olbers, and Poisson.

JOHN FRIEDRICH BLUMENBACH was born on the 11th of May, 1752, at Gotha, where his father was Prorector of the Gymnasium. He was accustomed to attribute the formation of his taste for literary history and the study of the natural sciences to the instructions and encouragement of Menz and Christ, two professors of Leipsig, who were friends and fellow-townsmen of his father. After studying for some time at Jena, he removed to Göttingen, for the purpose of completing his medical course, where he was very favourably noticed by Heyne and Michaelis, and more particularly by Büttner, Professor of Natural History, a great linguist, and a man of very extraordinary acquirements, whose museum of medals and natural history, when afterwards purchased by the University, he was employed to arrange. The skill and diligence which he showed in this employment, and the reputation of his professional and other attainments, secured him the appointment of Extraordinary Professor of Medicine in 1776, and of Ordinary Professor in 1778, a situation which he continued to hold for nearly sixty years.

His lectures comprehended Natural History, Comparative Anatomy, Physiology and Pathology, on all which subjects he published many valuable memoirs and other works, more particularly his admirable *Manuals*, which have long enjoyed an extraordinary popularity, and which have been translated into nearly every great European language.

The first of this series of publications was the "Handbuch der Naturgeschichte," which appeared in 1779. In his "Institutiones Physiologicæ," a work equally remarkable for the originality, precision and clearness of its statements, which was published in 1787, he made known his views on the "bildungs trieb," or "Nisus formativus," which he had before announced in the Göttingen Transactions for 1785, and which he made the subject of a special work in 1789*. His "Specimens of the Physiology of Warm- and Cold-blooded Animals," appeared in 1789. In 1794 he published in our Transactions, "Observations on some Egyptian Mummies opened in London in 1792," with especial reference to the three distinct varieties of national physiognomy which appear amongst them. His "Handbuch der vergleichenden Anatomie" appeared in 1805, and showed how fully he already appreciated the important views of Cuvier, which elevated Comparative Anatomy from a merely descriptive science to one which was capable of the most instructive generalizations, and affording the means of distinguishing types and laws of formation, as well for different organs as for different classes of animals.

* Ueber den Bildungs trieb.

The term *nisus formativus* was employed by Blumenbach to denote that *vital power* which is innate in all living organized bodies, and in active operation during the whole period of their vital existence, by which they are controlled and modified with reference to a specified end; it is that power by which the organizable matter of every individual being assumes, at its conception, its allotted form; which form is also capable of successive modifications by nutrition, according to the purpose for which it is destined by the Author of Nature, as well as of the reparation (within prescribed limits) of the injuries which it may have received. The announcement of this principle was received with extraordinary favour by physiologists, though it differed in little more than in name from the *vis essentialis* of the celebrated Wolff. It will be found to have formed the basis of some of his important speculations.

Blumenbach's well-known collection of the crania of the different races of mankind was made with a view to their more accurate classification, and gave rise to some of his more celebrated publications*. According to his ultimate views, he would make the Caucasian race the primary stem, from which all the others have degenerated to the Mongol at one extremity, and the Æthiopic at the other, interposing the American variety between the Caucasian and the Mongol, and the Malay between the Caucasian and the Æthiopic: it is difficult, however, to arrive at very correct general conclusions on this very interesting subject, without reference to those which are founded on the analogies of language, as has been done by Cuvier and Prichard.

It is quite impossible, within the short compass to which this notice is necessarily confined, to convey more than a very general impression of the vast variety of the labours of this distinguished philosopher. We find him applying his knowledge of natural history in illustration of the arts and poetry of antiquity†; he was also one of the first naturalists who appreciated the importance of a knowledge of fossils in determining the relative ages of the strata of the earth‡. He had cultivated archæology and literary history§ from his earliest years with more than common interest and zeal. There were, in fact, few departments of knowledge and literature, however remotely connected with the natural sciences, which he has not illustrated by his writings: it was when thus travelling

* Collectio Decad. vi. craniorum diversarum gentium tabulis 60 æneis illustrata: 1790—1820. De generis humani varietate nativâ: 1795.

† Specimen historiæ naturalis, antiquæ artis operibus illustratæ eaque vicissim illustrantis: 1803. Com. Acad. Gott., tom. xvi.

Specimen historiæ naturalis ex auctoribus classicis, præsertim poetis, illustratæ eosque vicissim illustrantis: 1815. Com. recent. Acad. Gott., tom. cxi.

‡ Beiträge zur Naturgeschichte der Vorwelt: 1790. Specimen archæologice telluris terrarumque imprimis Hannoveranarum: 1801. Also Comment. Acad. Gott., tom. xv. pp. 132—156. Com. recent. Acad. Gott., tom. cxi. pp. 3—24.

§ His "Introductio in Historiam Medicinæ Literariam," published in 1786, is a most instructive specimen of scientific bibliography.

into provinces of knowledge which were somewhat foreign to his own, that he was accustomed to quote the adage of Seneca: "*Soleo et in aliena castra transire, non tanquam transfuga, sed tanquam explorator.*"

Blumenbach had long been considered as the patriarch of the University of Göttingen, and was allowed the full privileges attached to his distinguished reputation, to the memory of his long services, and to the respect due to his venerable old age; he retained his usual cheerfulness, his memory, and much of his ancient activity, until nearly the close of his life. He died on the 22nd of January last, in the 88th year of his age, a memorable proof that the tranquil pursuits of science and the gentle stimulus of constant though not laborious employments are equally favourable to contentment of mind and length of days.

The name of the venerable Dr. Olbers, of Bremen, must be for ever memorable in the annals of astronomy, as the discoverer of two planets in our system. He was a member of that remarkable association of twenty-four astronomers which the indefatigable Baron de Zach of Gotha had formed towards the close of the last century, who undertook the vigilant observation of as many zones of the heavens, with a general view of discovering new comets and planets, and of recording any remarkable phenomena that might occur. Their zeal in the prosecution of these researches had been stimulated by the recent discovery of Herschel, as well as by the revival of a suggestion made by Kepler of the probable existence of a planet between Mars and Jupiter, in conformity with one of those mystical analogies, which might have been treated as the visionary dreams of an enthusiast, if they had not been so intimately connected with the discovery of the great laws forming the true basis of all correct knowledge of the system of the universe. The absence likewise of a planet at the distance from the sun, represented by 28, that of the earth being 10, interfered with the completeness of an empirical law which Bode of Berlin had suggested, and was not without its influence in confirming their faith in these extraordinary anticipations. The labours of this Association had been hardly organized, when the remarkable discovery of Ceres by Piazzi on the first day of the present century, in almost the precise position which Bode's singular law had assigned to it, seemed at once to convert their dreams into realities. Dr. Olbers calculated a circular, and Gauss an elliptic orbit for the same planet; and so wonderful was the accuracy of the first approximation to the elements which the latter had made, that they enabled Olbers to re-discover it on the 1st of January 1802, exactly one year after it had been first observed. It was in consequence of having formed a configuration of stars in the geocentric route of this planet, with a view to its being more readily found, that he discovered Pallas on the 25th of March of the same year*, at nearly the same distance from the sun†,

* "Ueber einen neuen von Dr. Olbers in Bremen endeckten höchst sonderbaren cometen." Zach's Monatliche Correspondenz for May, 1802.

† If the distance of the earth from the sun be 1, that of Ceres is 2·7674,

though moving in an orbit more than three times as much inclined to the plane of the ecliptic. The discovery of two planets, in the position where one of them had been so anxiously sought for *, induced Dr. Olbers to conjecture that they were fragments of a larger planet, which had been scattered by some great catastrophe, and that many others probably existed at nearly the same distance from the sun, and possessing common nodes: he therefore earnestly recommended astronomers to observe most carefully those spaces of the heavens in which the nodes of these planets are placed; a practice which he himself observed for many years. His exemplary diligence was rewarded by the discovery of Vesta on the 29th of March, 1807, nearly in the precise position in which he had conjectured that it was most likely to be found †. This was the last of those remarkable discoveries whose history illustrates in so striking a manner that union of profound, yet somewhat visionary speculation, with unconquerable perseverance, which is so characteristic of the German nation.

His well-known method of calculating the orbits of comets, which has been so generally used by German astronomers, was published at Weimar in 1797‡, with a commendatory preface by his zealous friend the Baron de Zach. This memoir, independently of its other merits, is sufficient to show that its author was a mathematician of very considerable powers, and perfectly acquainted with the works of contemporary astronomers.

Dr. Olbers was a diligent observer of comets; and there are few astronomers who have contributed so much to our knowledge of these singular bodies. He was the discoverer of several comets, including the celebrated comet of long period of 1815; and we are indebted to him, not merely for very important suggestions and observations respecting the celebrated comet of Encke, but still more for having developed the taste for astronomical calculations and observations of that great astronomer, who for many years served him in the capacity of assistant in his observatory.

The Baron de Zach visited this observatory in September, 1800 §, and has described the simple apparatus which enabled him to make so many important discoveries. It was placed in the upper part of his house in the midst of the town of Bremen, and afforded openings or platforms sufficient to afford a command of nearly every point of the heavens. His instruments were an excellent five-foot Dollond of $3\frac{3}{4}$ inches aperture, with a circular micrometer (which he used in the observation of the small planets), a five-foot reflecting telescope

and that of Pallas 2·7676: the difference is less therefore than 19,000 miles.

* Their essays on this subject were generally headed, "On the long-expected Planet between Jupiter and Mars."

† The longitude of the ascending node of Pallas is 172° 32′ 35″; that of Vesta is 171° 6′ 37″.

‡ Abhandlung ueber die lechteste und bequemste methode die Bahn eines cometen aus einigen beobachtungen zu berechnen.

§ Monatliche Correspondenz for Feb. 1801.

by Schröter, a quadrant by Bird, an admirable sextant by Troughton, and a clock by Castens of Bremen. He possessed no transit instrument or fixed instruments of any kind; yet he speedily availed himself of the circumstances of his locality to determine his time with great accuracy, as well as nearly every element which the peculiar character of his observations rendered necessary; so fertile are the resources of genius and enterprize to overcome difficulties, which by ordinary men would be abandoned as altogether insuperable.

Simeon Denis Poisson, one of the most illustrious men of science that Europe has produced, was born at Pithiviers on the 21st of June, 1781, of very humble parentage, and was placed, at the age of fourteen, under the care of his uncle, M. L'Enfant, surgeon, at Fontainebleau, with a view to the study of his profession. It was at the central school of this place that he was introduced to the notice of M. Billy, a mathematician of some eminence, who speedily discovered and fostered his extraordinary capacity for mathematical studies. In 1793 he was elected a pupil of the École Polytechnique, which was then at the summit of its reputation, counting amongst its professors Laplace, Lagrange, Fourier, Monge, Prony, Berthollet, Fourcroy, Vauquelin, Guyton Morveau, and Chaptal. The progress which he made at this celebrated school surpassed the most sanguine expectations of his kind patron, M. Billy, and secured him the steady friendship and support of the most distinguished of his teachers.

In the year 1800, he presented to the Institute a memoir "Sur le nombre d'intégrales complètes dont les équations aux différences finies sont susceptibles," which cleared up a very difficult and obscure point of analysis. It was printed on the recommendation of Laplace and Lagrange in the *Mémoires des Savans Etrangers*, an unexampled honour to be conferred on so young a man.

Stimulated by this first success, we find him presenting a succession of memoirs to the Institute on the most important points of analysis, and rapidly assuming the rank of one of the first geometers of his age. He was successively made Répétiteur and then Professor of the Polytechnic School, Professor at the Collège de France and the Faculté des Sciences, Member of the Bureau des Longitudes, and finally, in 1812, Member of the Institute.

His celebrated memoir on the *invariability* of the major axes of the planetary orbits, which received the emphatic approbation of Laplace, and secured him throughout his life the zealous patronage of that great philosopher, was presented to the Institute in the year 1808. Laplace had shown that the periodicity of the changes of the other elements, such as the eccentricity and inclination, depends on the periodicity of the changes of the major axis; a condition, therefore, which constitutes the true basis of the proof of the stability and permanence of the system of the universe. Lagrange had considered this great problem in the Berlin Memoirs for 1776, and had shown that, by neglecting certain quantities which might possibly modify the result, the expression for the major axis involved periodical inequalities only, and that they were consequently incapable of indefinite increase or dimi-

nution. It was reserved to Poisson to demonstrate *a priori* that the non-periodic terms of the order which he considered would mutually destroy each other; a most important conclusion, which removed the principal objection that existed to the validity of the demonstration of Lagrange*.

This brilliant success of Poisson in one of the most difficult problems of physical astronomy, would appear to have influenced him in devoting himself thenceforward almost exclusively to the application of mathematics to physical science; and the vast number of memoirs and works (amounting to more than 300 in number) which he published during the last thirty years of his life, made this department of mathematical science, and more particularly whatever related to the action of molecular forces, pre-eminently his own. They comprehend the theory of waves and of the vibrations of elastic substances, the laws of the distribution of electricity and magnetism, the propagation of heat, the theory of capillary attraction, the attraction of spheroids, the local magnetic attraction of ships, important problems on chances, and a multitude of other subjects, which the time allowed for this notice will not permit me to mention. His well-known treatise on Mechanics is incomparably superior to every similar publication in the clear and decided exposition of principles and methods, and in the happy and luminous combination of the most general theories with their particular and most instructive applications.

Poisson was not a philosopher who courted the credit of propounding original views which did not arise naturally out of the immediate subjects of his researches; and he was more disposed to extend and perfect the application of known methods of analysis to important physical problems, than to indulge in speculations on the invention or transformation of formulæ, which, however new and elegant, appeared to give him no obvious increase of mathematical power in the prosecution of his inquiries. His delight was to grapple with difficulties which had embarrassed the greatest of his predecessors, and to bring to bear upon them those vast resources of analysis, and those clear views of mechanical and physical principles in their most refined and difficult applications, which have secured him the most brilliant triumphs in nearly every department of physical science.

The confidence which he was accustomed to feel in the results of his analysis—the natural result of his own clear perception of the necessary dependence of the several steps by which they were deduced—led him sometimes to accept conclusions of a somewhat

* The publication of this memoir recalled the attention of this illustrious mathematician to a subject which he had long neglected, and gave rise to three of his noblest memoirs. Poisson, in his "Mémoire sur le Mouvement de la Lune autour de la Terre," has not satisfactorily shown that the major axis of the moon's orbit contains no argument of long period amongst the terms which involve lower powers of a certain quantity m, which denotes the ratio of the sun's mean motion to that of the moon, than the fourth; a demonstration of this most important proposition has been given by Sir John Lubbock in the Philosophical Magazine for the present year.

startling character: such were his views of the constitution and finite extent of the earth's atmosphere, which some distinguished philosophers have ventured to defend. It is not in mathematical reasonings only that we are sometimes disposed to forget that the conclusions which we make general are not dependent upon our assumed premises alone, but are modified by concurrent or collateral causes, which neither our analysis nor our reasonings are competent to comprehend.

The habits of life of this great mathematician were of the most simple and laborious kind; though he never missed a meeting of the Institute, or a lecture, or an examination, or any other public engagement, yet on all other occasions, at least in his later years, he denied access to all visitors, and remained in his study from an early hour in the morning until six o'clock at night, when he joined his family at dinner, and spent the evening in social converse, or in amusements of the lightest and least absorbing character, carefully avoiding every topic which might recall the severity of his morning occupations. The wear and tear, however, of a life devoted to such constant study, and the total neglect of exercise and healthy recreations, finally undermined his naturally vigorous constitution, and in the autumn of 1838 the alarming discovery was made that he was labouring under the fatal disease of water in the chest. The efforts of his physicians contributed for a time to mitigate the more serious symptoms of his malady; but every relaxation of his sufferings led to the resumption of his labours; and to the earnest remonstrances of his friends, and the entreaties of his family, he was accustomed to reply, that to him *la vie c'était le travail*; nay, he even undertook to conduct the usual examinations of the École Polytechnique, which occupied him for nearly ten hours a day for the greatest part of a month. This last imprudent effort ended in an attack of paralysis, attended by loss of memory and the rapid obscuration of all his faculties; he continued to struggle, amidst alternations of hope and despondency, for a considerable period, and died on the 25th of April last, in the fifty-ninth year of his age.

Poisson was eminently a deductive philosopher, and one of the most illustrious of his class; his profound knowledge of the labours of his predecessors, his perfect command of analysis, and his extraordinary sagacity and tact in applying it, his clearness and precision in the enunciation of his problems, and the general elegance of form which pervaded his investigations, must long continue to give to his works that classical character, which has hitherto been almost exclusively appropriated to the productions of Lagrange, Laplace, and Euler. If he was inferior to Fourier or to Fresnel in the largeness and pregnancy of his philosophical views, he was incomparably superior to them in mathematical power: if some of his contemporaries rivalled or surpassed him in particular departments of his own favourite studies, he has left no one to equal him, either in France or in Europe at large, in the extent, variety, and intrinsic value of his labours.

The last work on which he was engaged was a treatise on the theory of light, with particular reference to the recent researches of

Cauchy: nearly two hundred pages of this work are printed, which are altogether confined to generalities, whose applications were destined to form the subject of a second and concluding section: those who are acquainted with the other works of Poisson will be best able to appreciate the irreparable loss which optical science has sustained in the non-completion of such a work from the hands of such a master.

The Statutes relating to elections were then read by the Secretary.

Joseph Smith, Esq. and Archibald John Stephens, Esq., were appointed Scrutators to assist the Secretaries in examining the balloting lists.

The ballot was then taken, and Dr. Roget, on the part of the Scrutators, reported the following gentlemen as being duly elected Officers and Council for the ensuing year:

President.—The Marquis of Northampton.

Treasurer.—Sir John William Lubbock, Bart., M.A.

Secretaries.—Peter Mark Roget, M.D.;
Samuel Hunter Christie, Esq., M.A.

Foreign Secretary.—John Frederic Daniell, Esq.

Other Members of the Council.—George Biddell Airy, Esq., M.A., A.R.; Sir John Barrow, Bart.; Thomas Bell, Esq.; William Thomas Brande, Esq.; Richard Bright, M.D.; Sir Benjamin Brodie, Bart.; The Earl of Burlington; Bryan Donkin, Esq.; William Henry Fitton, M.D.; Edward Forster, Esq.; The Very Rev. the Dean of Ely, D.D.; Richard Phillips, Esq.; The Rev. Baden Powell; Major Edward Sabine, R.A.; Lieut.-Col. William H. Sykes; Rev. Robert Willis, M.A.

The Thanks of the Meeting were given to the Scrutators for their trouble in examining the lists.

The following is the statement with respect to the Receipts and Payments of the Society during the preceding year, which was laid on the table by the Treasurer:—

Statement of the Receipts and Payments of the Royal Society between Nov. 28, 1839, and Nov. 28, 1840.

Receipts:—	£	s.	d.
Balance in the hands of the Treasurer at the last Audit ..	1808	9	7
27 Weekly Contributions, at one shilling 70 4 0			
184 Quarterly Contributions 697 0 0			
	767	4	0
Carried forward.	2575	13	7

	£	s.	d.
Brought forward ..	2575	13	7
31 Admission Fees	310	0	0
4 Compositions for Annual Payments at £60.....	240	0	0
Rents:—			
One year's rent of estate at Mablethorpe: due at Michaelmas 1840 ..... £ 107 0 0			
One year's rent of lands at Acton: due at Michaelmas, 1840 ..... 60 0 0			
One year's fee-farm rent of lands in Sussex; land-tax deducted: due at Michaelmas, 1840 19 4 0			
One-fifth of the clear rent of an estate at Lambeth Hill, from the Royal College of Physicians, in pursuance of Lady Sadleir's will: due at Midsummer, 1840 ..... 3 0 0			
	189	4	0
Dividends on Stock:—			
One year's dividend on £14,000 Reduced 3 per cent. Annuities 420 0 0			
Dividend on £3452. 1. 1 Consols, the produce of the sale of the premises in Coleman-street..... 103 11 2			
One year's dividend on £200 Consols 6 0 0			
Donation Fund.			
Half year's dividend on £4150. 0. 0 Consols 62 5 0			
Half year's ditto .... £4544. 16. 9 Consols 68 3 5			
Rumford Fund.			
One year's dividend on £2292. 11. 7 Consols 68 15 6			
Fairchild Fund.			
One year's dividend on £100 New South Sea Annuities 3 0 0			
	731	15	1
Miscellaneous Receipts:—			
Sale of Philosophical Transactions, Abstracts of Papers, and Catalogue of the Royal Society's Library	251	2	6
Sale of Catalogue to Subscribers, as also Old Catalogue and Sir Humphry Davy's Discourses	36	16	6
For Books purchased for Antarctic Expedition.....	4	0	0
Received from the Treasury on Account of Disbursements for the Antarctic Expedition and fixed Observatories 1182 9 2; 106 4 0			
	1288	13	2
Basire (contra) paid in last year's account.....	98	4	0
Total Receipts	£5725	8	10

PAYMENTS :—	£	s.	d.	£	s.	d.
Fairchild Lecture.—The Rev J. J. Ellis, for delivering the Fairchild Lecture for 1840				3	0	0
Bakerian Lecture.—George Biddell Airy, Esq., for the Bakerian Lecture for 1840				4	0	0
Rumford Fund.—						
Mr. Wyon, for Gold and Silver Rumford Medal				64	0	0
Donation Fund.—						
Cost of £394. 16. 7, 3½ Consols				358	6	4
British Museum Fund.—						
Bailliere: for Books	63	15	0			
Maynard: for ditto	20	5	6			
Simpkin and Co.: for ditto	8	0	6			
Willis: for ditto	3	7	0			
Sotheby: for ditto	15	13	6			
				111	1	6
Salaries :—						
Dr. Roget, one year, as Secretary	105	0	0			
S. H. Christie, Esq., one year, as Secretary	105	0	0			
Ditto for Index to Phil. Trans.	5	5	0			
John F. Daniell, Esq., one year, as For. Sec.	20	0	0			
Mr. Roberton, one year, as Assistant-Secretary	200	0	0			
Mr. W. E. Shuckard, one year, as Librarian	50	0	0			
Mr. Holtzer, one year, as Porter	30	0	0			
Ditto, for extra Porterage	10	0	0			
				525	5	0
Mablethorpe Tithe Suit :—Society's proportion of the Costs of defending the Suit				83	9	10
Fire Insurance, on the Society's Property				22	11	6
Mrs. Coppard: Gratuity				10	0	0
Mr. Shuckard, for making Catalogue of MSS. Letters				42	0	0
Mr. Panizzi: for Royal Society's Catalogue				328	0	0
Bills :—						
Taylor:						
Printing the Phil. Trans., 1839, part 2	141	16	0			
Ditto, 1840, part 1; Proceedings, Nos. 40—44; Circulars, Lists of Fellows, Ballot-lists, Statement of Payments, and Minutes of Council; &c. &c.	292	6	0			
Bowles and Gardiner:						
For Paper for the Phil. Trans., 1839, part 2, and 1840, part 1	150	0	0			
Basire:						
For Engraving and Copper-plate Printing for Phil. Trans., 1839, part 2	97	1	9			
Ditto, 1840, parts 1 and 2, &c.	300	11	3			
Gyde:						
Boarding and Sewing 800 Parts of Phil. Trans., 1839, part 2	27	4	0			
Ditto, 1840, part 1	27	4	0			
				1036	3	0
Carried forward				2587	17	2

	£	s.	d.	£	s.	d.
Brought forward..				2587	17	2
Taylor:						
Printing the Report of the Physical Committee	135	5	2			
Gardner:						
Map of Magnetic Intensity, for Report of Physical Committee	27	16	0			
Cox and Sons:						
Form Books, &c. for Magnetic Observatories to ditto	13	17	0			
Pouncey and Sons:						
For Stationery	14	19	0			
Saunderson:						
For Shipping Expenses	3	3	3			
Brecknell and Turner:						
Wax Lights, Candles, and Lamp Oil	37	5	6			
Cubitt:						
For Book-Cases, Stoves in Library, and Repairing Windows, Carpets, &c.	168	17	2			
Exchequer Fee for paying dividend	0	13	0			
Clerks: Christmas Fee	1	1	0			
Arnold:						
For Coals	18	17	0			
Ditto (Porter's yearly allowance)	4	7	0			
Murray:						
For taking Meteorological Observations	7	0	0			
Tuckett:						
Bookbinding	261	17	6			
Feetham:						
For Alterations of Stoves in the Council Room and Library	16	16	0			
Gwillim:						
Mats, Brushes, Fire-wood, &c.	6	14	5			
Few, Hamilton and Few, Solicitors:						
Law Expenses	55	5	3			
Packer:						
Ingrossing Addresses to Her Majesty and Prince Albert	7	3	0			
				780	17	3
Taxes and Parish Rates:						
Land and Assessed Taxes	30	17	0			
Poor Rate	17	0	0			
Church Rate	4	5	0			
Rector's Rate	3	3	9			
				55	5	9
Petty Charges:						
Hodson: Silliman's Journal, Nos. 76—80 ..	1	17	6			
Repairing Chandelier in Meeting Room ..	3	10	0			
Carried forward..	5	7	6	3424	0	2

	£	s.	d.	£	s.	d.
Brought forward..	5	7	6	3424	0	2
Hartnup: for extending Barometrical Tables	2	0	0			
Frame for Oldenburgh	2	0	0			
Charwoman's Wages	27	6	0			
Ditto, Extra work	4	10	6			
Stamps	2	19	6			
Postage and Carriage	7	5	1			
Expenses on Foreign Packets, &c.	6	9	4			
Library and Window-cleaning, &c.	2	8	6			
Miscellaneous expenses	14	9	6			
				74	15	11

An Account of Disbursements for the Antarctic Expedition and Magnetic Observatories.

On Account of the Observatories:—								
Newman	280	11	6					
Deane	240	8	0					
Huxley	39	10	11					
Allen and Co.	99	18	0					
Troughton and Simms	33	10	6					
Jones and Causton	27	17	0					
Osler	6	6	0					
Wilmot	4	15	9					
Lefroy	3	19	6					
Sabine	10	16	0					
				747	13	2		
Expedition and Observatories conjointly:—								
Taylor	95	5	6					
Basire	98	4	0					
Adie	75	11	6					
Arnold and Dent	54	10	0					
				323	11	0		
Antarctic Expedition:—								
Newman	188	16	0					
Robinson	19	15	0					
Watkins and Hill	6	18	0					
Troughton and Simms	1	10	0					
Packer	0	10	0					
				217	9	0	1288	13 2
Total Payments							£4787	9 3
Total Receipts and Balance							5725	8 10
Balance in the hands of the Treasurer							£ 937	19 7

JOHN WILLIAM LUBBOCK, *Treasurer.*

November 28th, 1840.

The Balances in hand, now belonging to the several trusts, are as under: viz :—

	£	s.	d.
British Museum Fund	54	10	4
Donation Fund	130	8	5
Rumford Fund	71	11	6

The following table shows the progress and present state of the Society, with respect to the number of Fellows :—

	Patron and Honorary.	Foreign.	Having compounded.	Paying £2. 12*s.* Annually.	Paying £4 Annually.	Total.
November, 1839 ..	11	48	556	27	166	808
Since elected.....	1	4	3	.....	29	37
Since re-instated ..	.....	.....	.....	.....	+1	1
Since compounded	.....	.....	+1	.....	−1	
Since deceased, &c.	.....	−3	−23	−2	−5	−33
Withdrawal	.....	.....	.....	.....	−1	−1
November, 1840	12	49	537	25	189	812

Weekly and Quarterly Contributions.

	£		
1830.....	363	4	0
1831.....	286	0	0
1832.....	255	6	0
1833.....	283	7	6
1834.....	318	18	6
1835.....	346	12	6
1836.....	495	0	0
1837.....	531	0	0
1838.....	599	4	0
1839.....	666	16	0
1840.....	763	4	0